我々の研究内容

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Yamagata-Sekihara, Nagahiro, Jido, Hirenzaki
in preparation

Yamagata, Nagahiro, Okumura, Hirenzaki,
PTP114(05)301 ; Errata 114(05)905
Yamagata, Nagahiro, Hirenzaki,
PRC74(06)014604
Yamagata, Hirenzaki, EPJA31(07)255
Yamagata, Nagahiro, Kimura, Hirenzaki
PRC76(07)045204

○ $\bar{K}NN$ systems

- グリーン関数法による生成スペクトラムの計算

T. Koike, T. Harada ,
PLB 652(07)262, NPA 804(08)231.

- $\bar{K}$ – NN 光学ポテンシャル・・・ T ρ 近似（Chiral Unitary モデルの散乱振幅 ）
  理論より導かれるエネルギー依存性を持つ

novelty !!

- すべての可能な2核子と $\bar{K}$ の系を考える
- 素過程おける $\bar{K}^0$ 生成過程も考える

$^3\mathrm{He}(K^-,n)$	$^3\mathrm{He}(K^-,p)$	$t(K^-,n)$	$t(K^-,p)$
K^-pp	K^-pn	K^-pn	K^-nn
$\bar{K}^0pn$		$\bar{K}^0nn$	

We show the missing mass spectra accompanied
by the particle emissions due to Kbar absorption in nucleus.
We also consider p-wave optical potential to take account of
Σ(1385) resonance effects.

Our theoretical tools

- 複素エネルギー平面上でKlein-Gordon方程式を
  エネルギーについてselfconsistentになるように解く。

E. Oset and L. L. Salcedo, J. Comput. Phys. 57 (85) 361

$$[-\vec{\nabla}^2 + \mu^2 + 2\mu V_{\rm opt}(r,\omega)]\phi(\vec{r}) = [\omega - V_{\rm coul}(r)]^2\phi(\vec{r})$$

- Green's function methodを用いて生成スペクトラムを計算

O. Morimatsu, K. Yazaki, NPA435(85)727, NPA483(88)493

$$\frac{d^2\sigma}{dEd\Omega} = \left(\frac{d\sigma}{d\Omega}\right)_{\bar{K}N\to N\bar{K}} \sum_\alpha -\frac{1}{\pi}{\rm Im}\int d\vec{r}d\vec{r}'\, f_\alpha^*(\vec{r}')G(E;\vec{r}',\vec{r})f_\alpha(\vec{r})$$

$\left(\frac{d\sigma}{d\Omega}\right)_{\bar{K}N\to N\bar{K}}$: Elementary cross section (Exp. data)

$G(E;\vec{r}',\vec{r})$: Green function for K interacting with the nucleus

Optical Potential

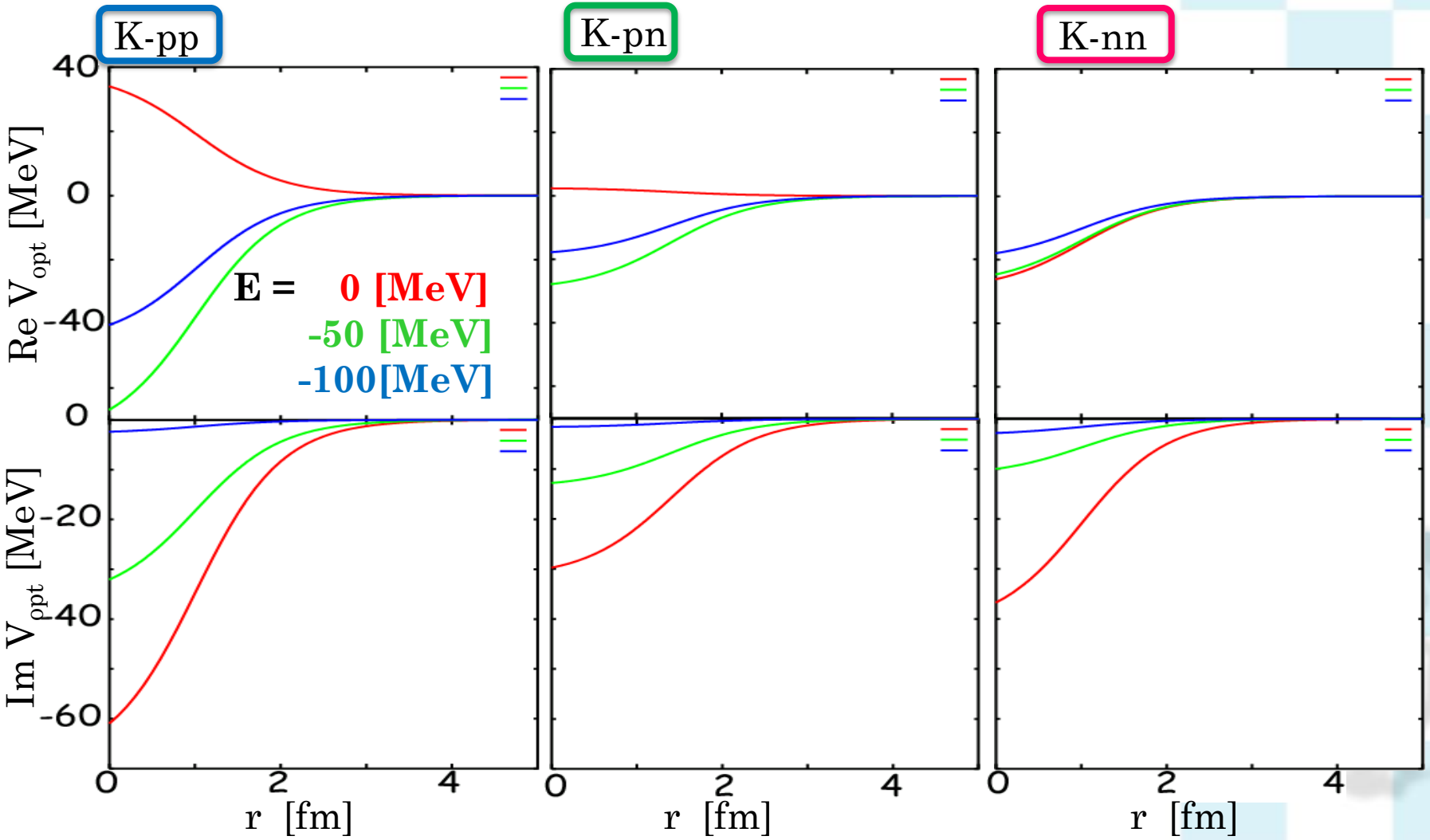
- Chiral Unitary Model

Tρ approximation.

$\frac{A-1}{A}$ factor (To avoid double counting)

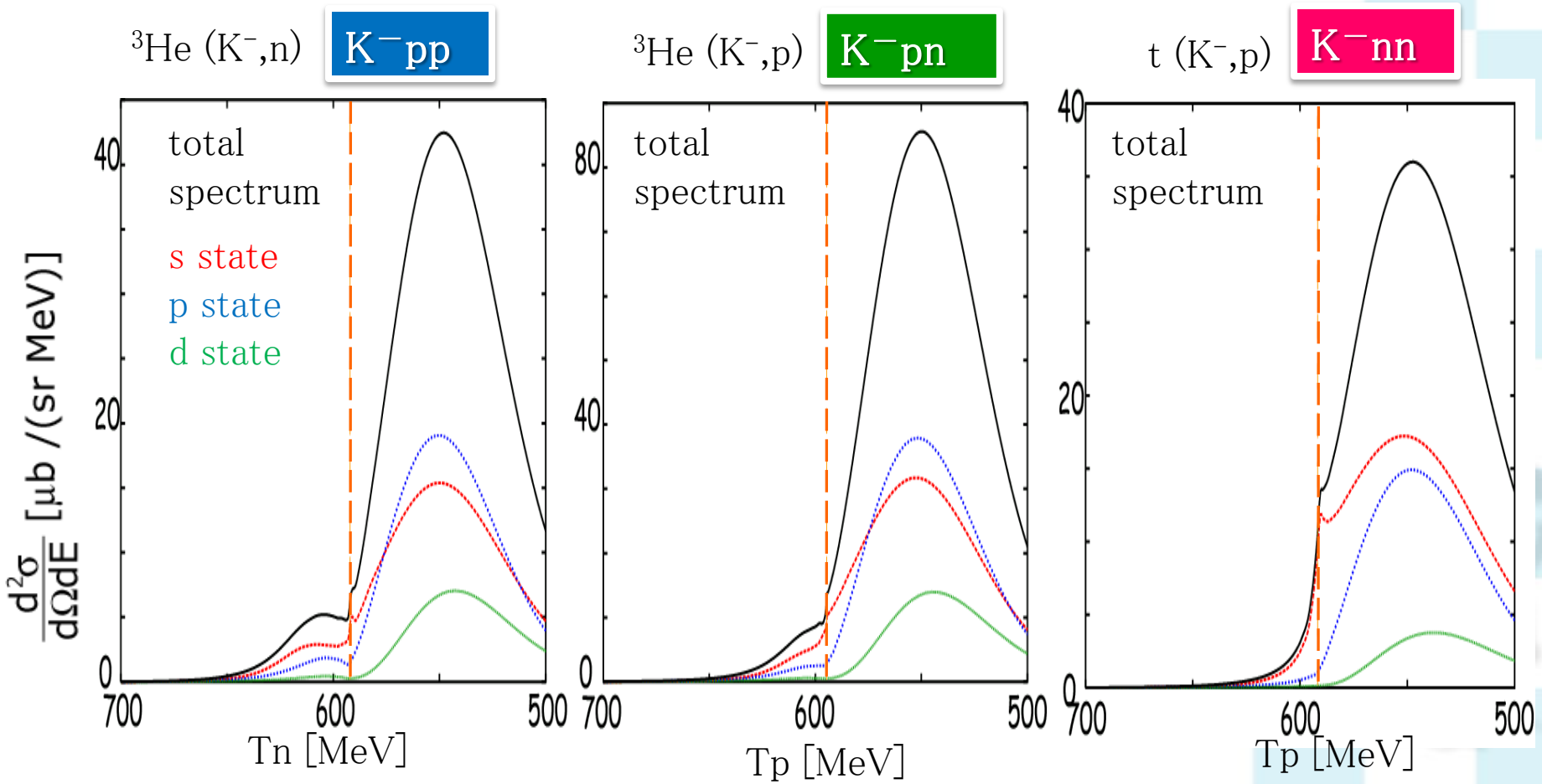
only **1 body absorption**.

E. Oset, A. Ramos, Nucl. Phys. A635 (98)99
E. Oset, A. Ramos, C. Bennhold, Phys. Lett. B527(02)99



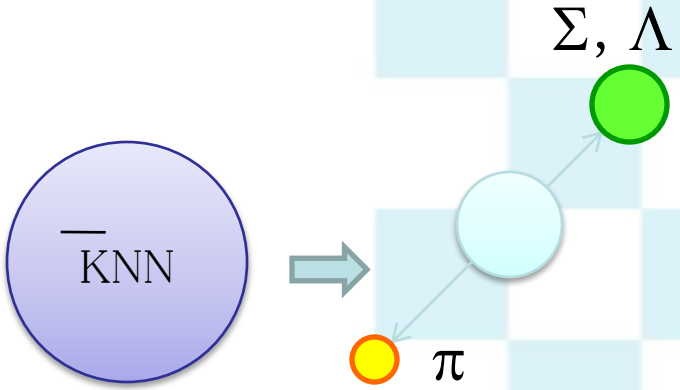
Results

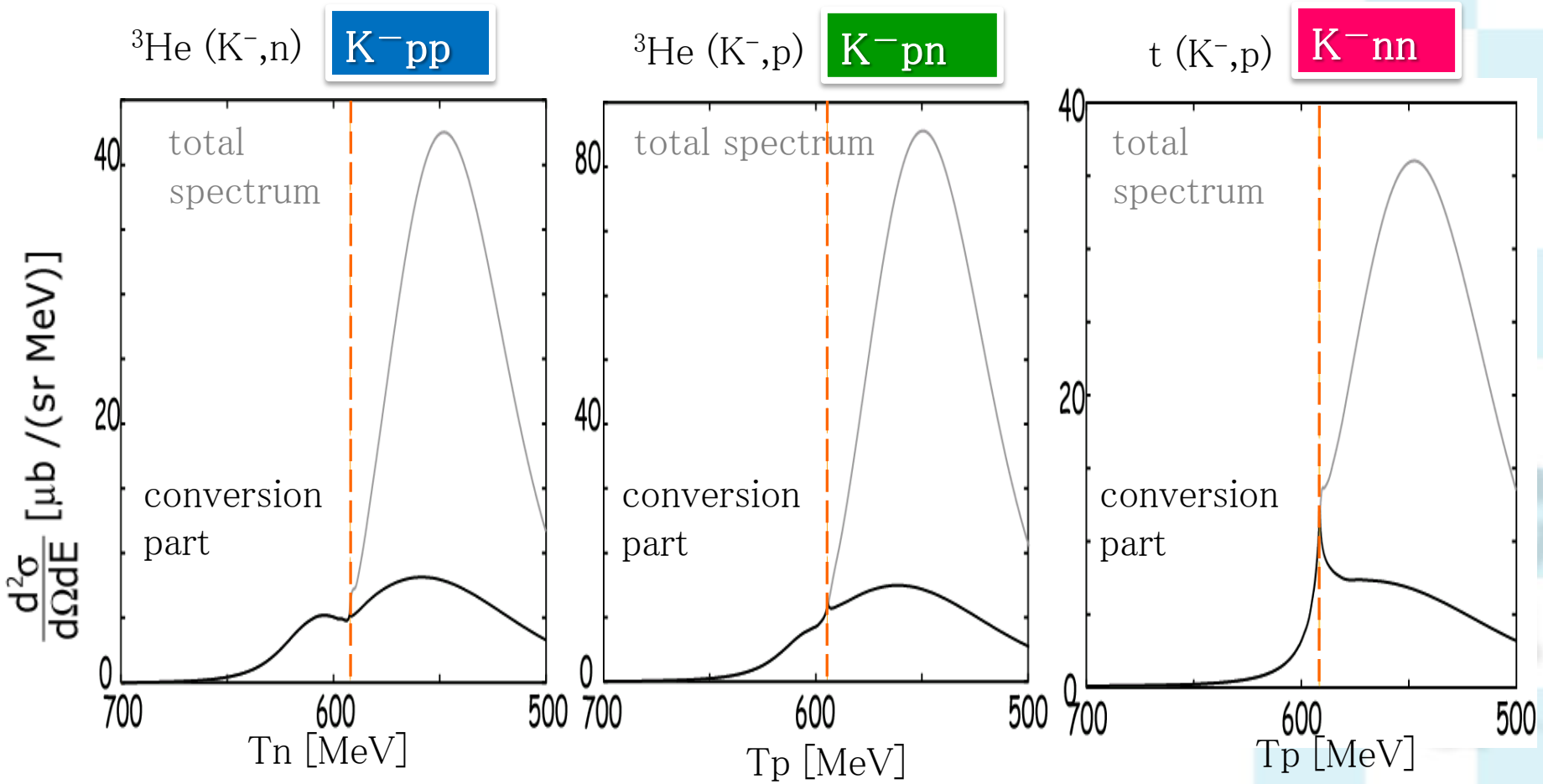
We may observe the contributions from the formation of $\overline{KNN}$ systems!!



Results -- Conversion Part

- If we can observe contributions
  from 1 body absorption process…





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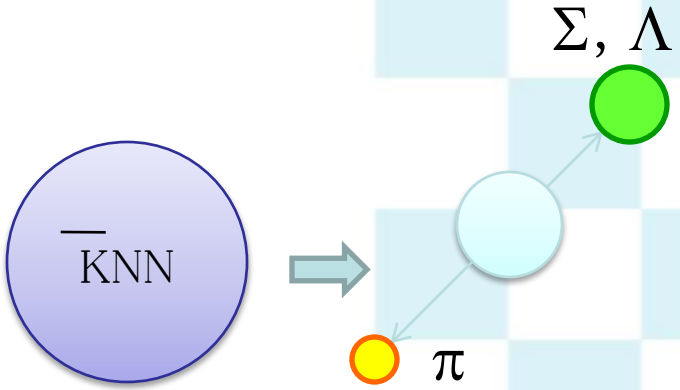

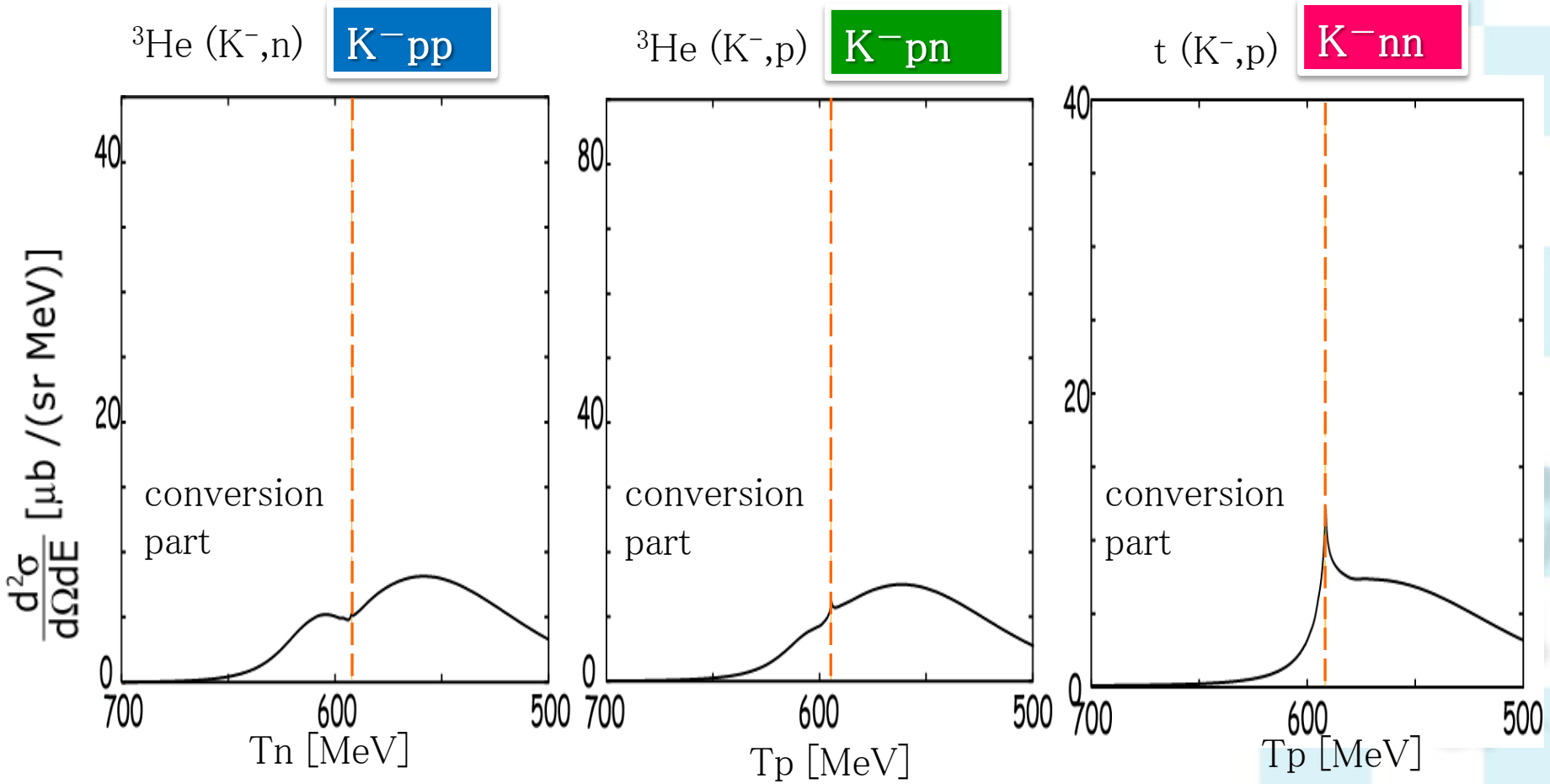

Results -- Conversion Part

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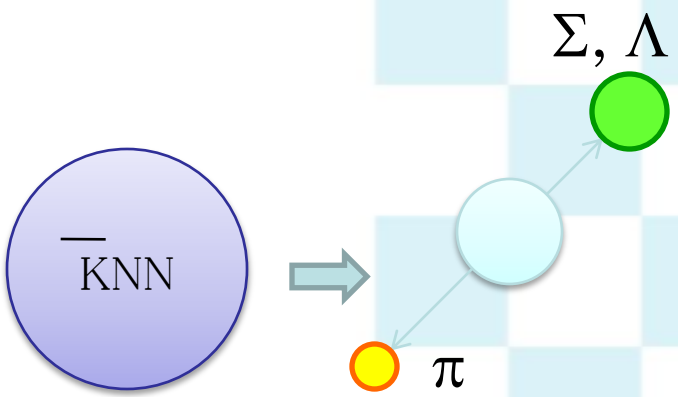
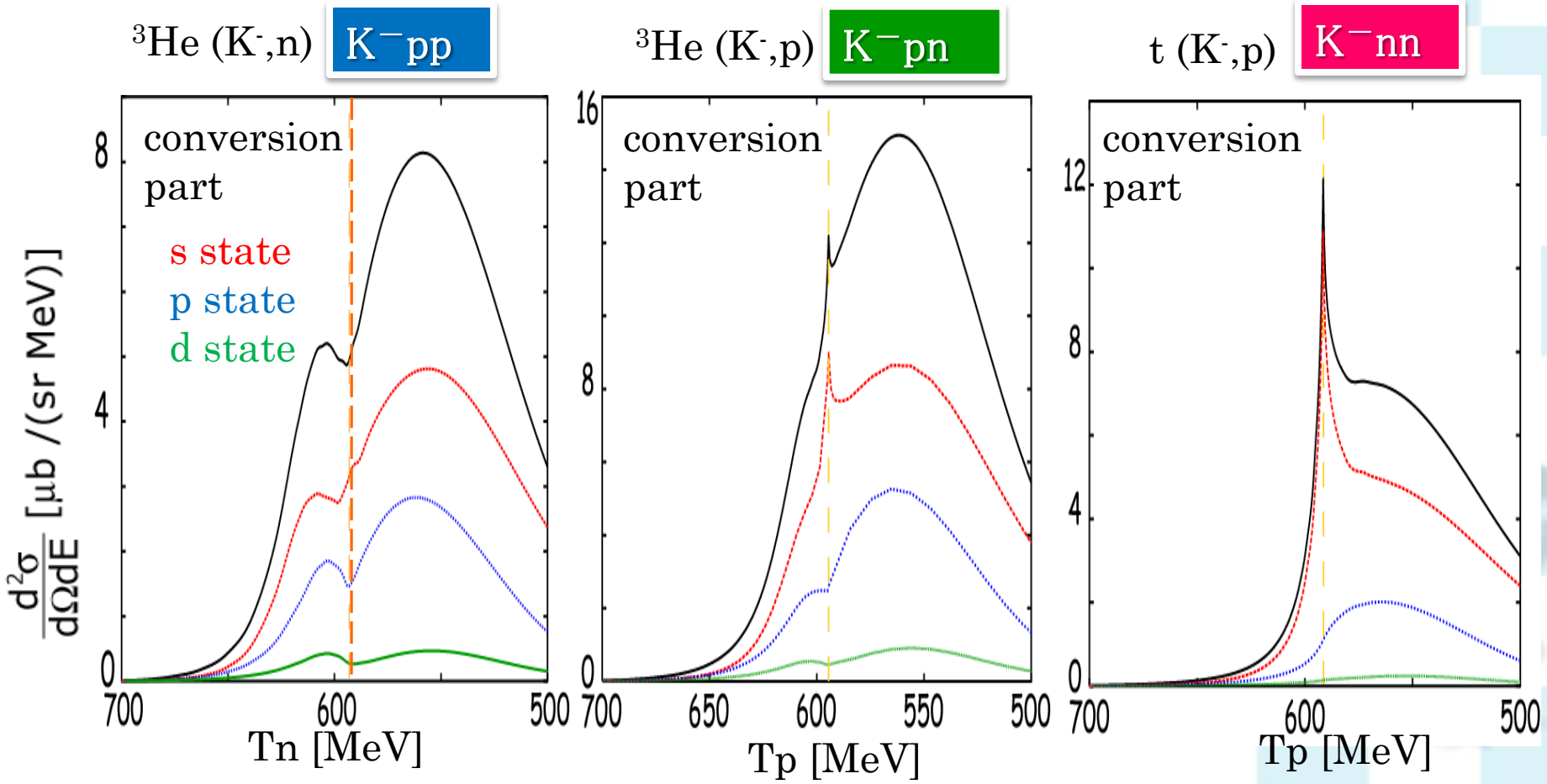
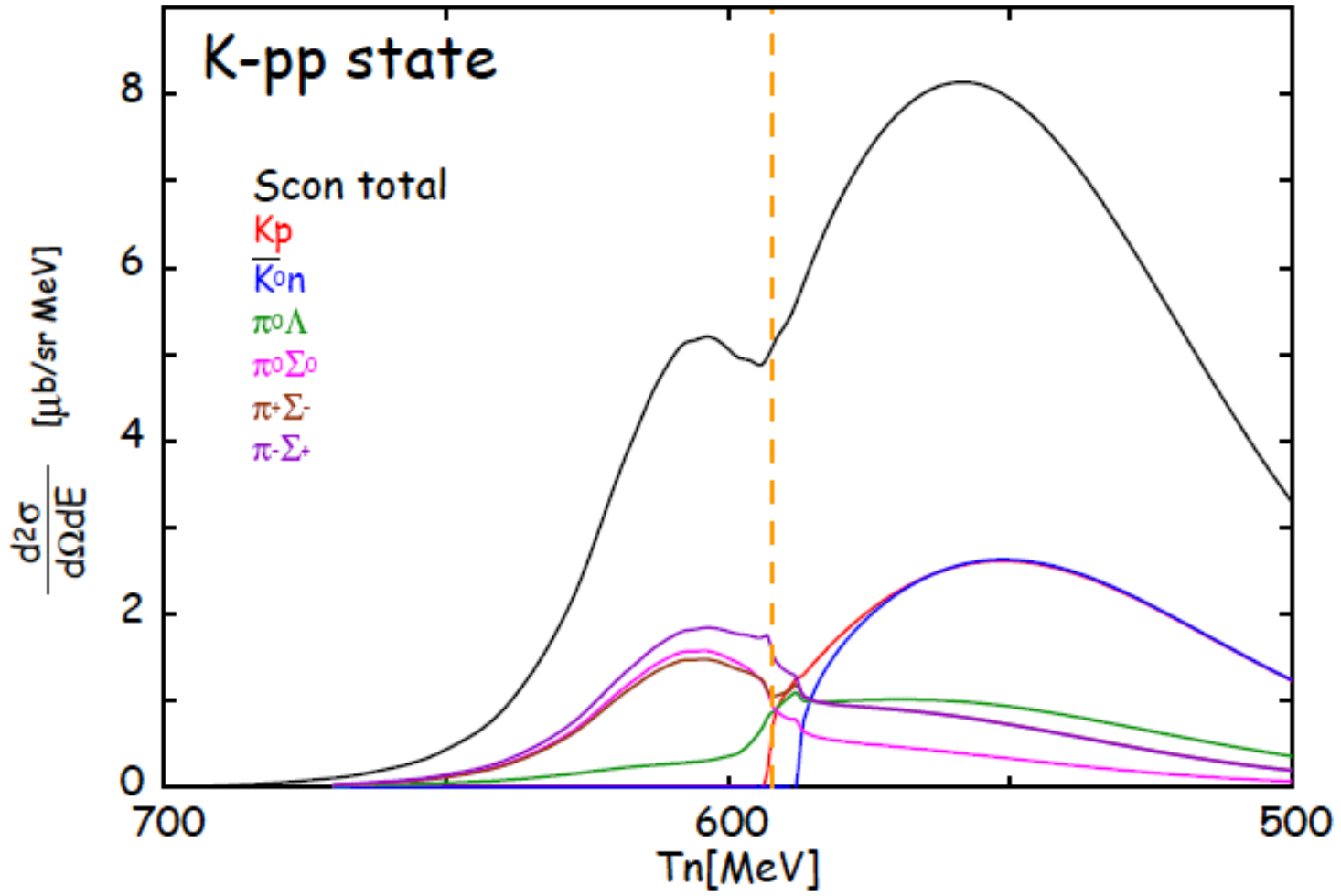




Results -- Conversion Part

- If we can observe contributions from 1 body absorption process…

^{3}He (K^-,n) K^-pp



Results -- Conversion Part

^{3}He (K^-,n) K^-pp

not include the contribution from $\Sigma(1385)$

Dominant in bound region